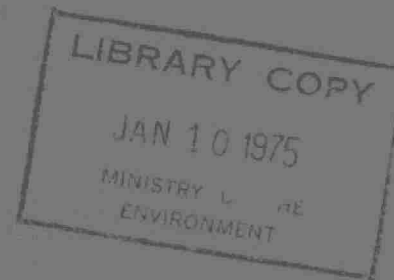


OPERATING SUMMARY

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MINISTRY OF THE ENVIRONMENT



TIMMINS

1973

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ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, NORTHEASTERN REGION
R. Moore

MANAGER, UTILITY OPERATIONS
J. Wesno

TIMMINS
WATER POLLUTION CONTROL PLANT

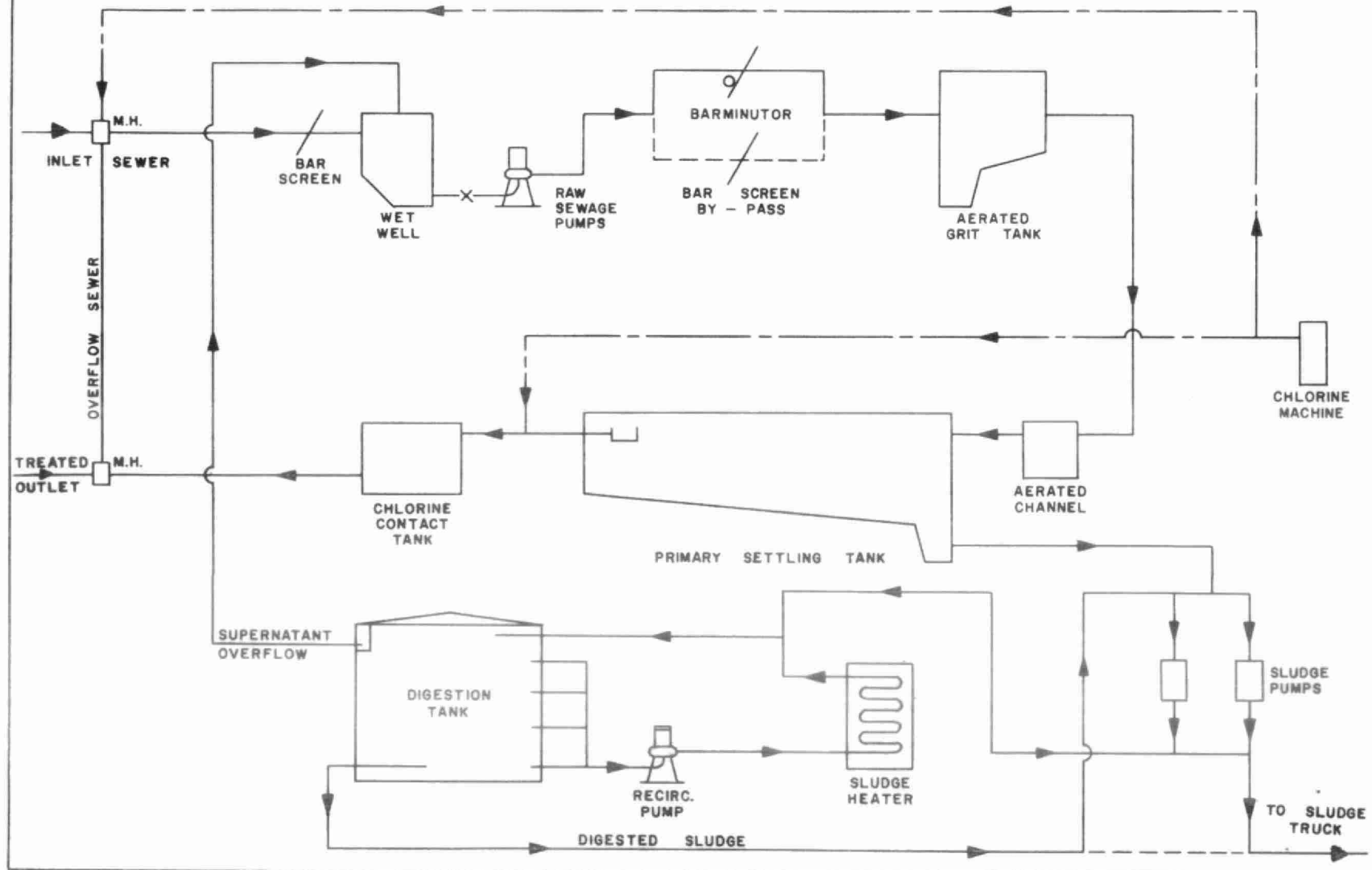
operated for
THE TOWN OF TIMMINS
by the
MINISTRY OF THE ENVIRONMENT

1973 ANNUAL OPERATING SUMMARY

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TIMMINS WPCP



DESIGN DATA

PROJECT NO. 2-0071-60

TREATMENT Primary

DESIGN FLOW 3.0 mgd

DESIGN POPULATION 30,000

BOD - Raw Sewage 180 mg/l
- Removal 35-40%

SS - Raw Sewage 200 mg/l
- Removal 60-65%

RAW SEWAGE PUMPS

Screening

Type: Manually Cleaned
Size: 2" opening

Pumps

Type: Worthington
Size: One 3650 gpm @ 26' tdh
One 3120 gpm @ 26' tdh
One 3120 gpm @ 26' tdh (diesel)

PRIMARY TREATMENT

Comminution

Type: Chicago Pump Barminutor
Size: One Model C (36")

Grit Removal

Type: Aerated
Size: One 13' x 18 3/4' x 12 1/2'
(19,000 gal)
Retention: 9.1 min
Air Supply: Two Sutorbilt

Primary Sedimentation

Type: Jeffrey
Size: Two 125' x 20' x 12' (avg)
(374,000 gal)
Retention: 3.0 hr
Loading: Surface, 600 gal/ft²/day
Weir, 9900 gal/ft/day

CHLORINATION

Type: F & P
Size: One 200 lb/day

Chlorine Contact Chamber

Size: Two 47 1/2' x 7' x 9'7"
(37,400 gal)
Retention: 19 min

OUTFALL

To Mattagami River

SLUDGE HANDLING

Digestion System - single-stage,
concrete
Type: PFT (gas mixed)
Size: One 65' dia x 24' swd (80,000
cu ft or 0.50 mil gal)
Loading: 1.35 lb/cu ft/mo

'73 Review

GENERAL

The Timmins Water Pollution Control Plant is a 3 million gallon per day primary treatment plant consisting of grit removal, coarse screening, sedimentation, single-stage anaerobic sludge digestion and chlorination facilities. The plant is staffed by a chief operator, a maintenance technician and two operators.

A design report was received late in the year recommending expansion of the plant capacity to 6 million gallons per day. The expanded plant when constructed either in 1975 or 1976 will include a new grit removal facility, a modified screening removal facility, additional sedimentation and chlorine contact tanks, and a second stage digestion unit.

The larger raw sludge pump was installed in October and the number of line blockages was reduced to a manageable level.

The decision to convert to natural gas from fuel oil to operate the plant boiler was made late in the year. Natural gas is less expensive and is more compatible with digester gas usage in boiler operation.

The plant metering equipment was replaced with a more efficient milli amperage solid state unit late in the year.

Septic tank wastes created an odour and a solids handling problem at the plant. Attempts will be made to control the rate of septic waste discharge in 1974. This will provide for better dilution of the wastes.

The digester gas mixing equipment did not operate on automatic control for a period of four months. This resulted in the production of a poorer quality sludge during that period, and a decrease in the volatile solids reduction in the digester from the previous year.

EXPENDITURES

The total operating cost for the year was \$82,101., an increase of less than one per cent over 1972.

Additional expenditures which were deducted from the reserve fund during the year amounted to 2,792.23 for the following items:

1. Railings around clarifier
2. Equipment for sludge pumping
3. Flow meter.

The balance in the fund at December 31, 1973 was \$32,316.08.

PLANT FLOWS AND CHLORINATION

The average daily flow for the year was 3.8 million gallons; a total year estimated flow of 1387 million gallons. This compares with 3.9 million gallons per day in 1972. Metering problems were encountered in January, February, March, October and November.

The design capacity of 3 million gallons per day was exceeded 68 per cent of the time.

A total of 49,900 pounds of chlorine was used during the year, representing an average chlorine dosage of 3.6 mg/l.

PLANT EFFECIENCY

The raw sewage BOD and suspended solids concentrations averaged 120 mg/l and 160 mg/l respectively. These represented a decrease in BOD and suspended solids concentrations from the previous year of 10 per cent and of 40 per cent respectively.

The final effluent BOD and suspended solids concentrations averaged 50 mg/l and 63 mg/l respectively which represent BOD and suspended solids removals of 58 per cent and 60 per cent respectively. The BOD reduction increased by approximately 52 per cent over the previous year and was attributed to better process control by plant staff.

SLUDGE DIGESTION AND DISPOSAL

A total of 15.15 million gallons of raw sludge was pumped to the digester with a volatile matter content in the solids of 68 per cent. A total of 2.1 million gallons of digested sludge was removed from the digester and hauled away by tank truck. The volatile matter content in the digested sludge solids was 59 per cent and represented a volatile solids reduction in the digester of 32 per cent. This is considerably less than the 48 per cent reduction experienced in the previous year. A volatile solids reduction of 50 per cent is considered satisfactory for primary treatment plants.

CONCLUSION

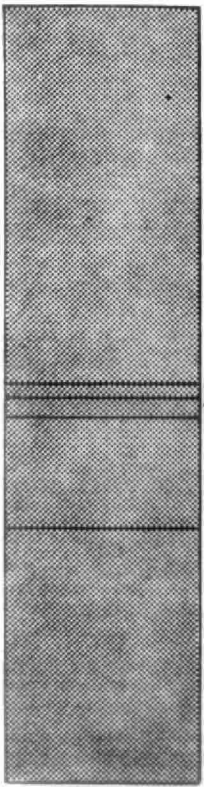
The average daily flows did not change significantly from the previous year but the treatment efficiency for BOD removal increased significantly. The higher removal efficiency was due to better process control by plant staff.

The volatile solids reduction in the digester decreased from 48 per cent to 32 per cent and was due to the inconsistent gas mixing operation during part of the year.

It is anticipated that construction for the plant expansion will begin sometime in 1975 or 1976.

ANNUAL COSTS

1973 OPERATING COSTS



● SALARIES & WAGES	48 %
● EMPLOYEE BENEFITS	2 %
● TRANSPORTATION & COMMUNICATIONS	2 %
● SERVICES	14 %
● SUPPLIES & EQUIPMENT	33 %
● AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	NIL
● TRANSFER PAYMENTS	NIL
● OTHER TRANSACTIONS	NIL

YEARLY OPERATING COSTS

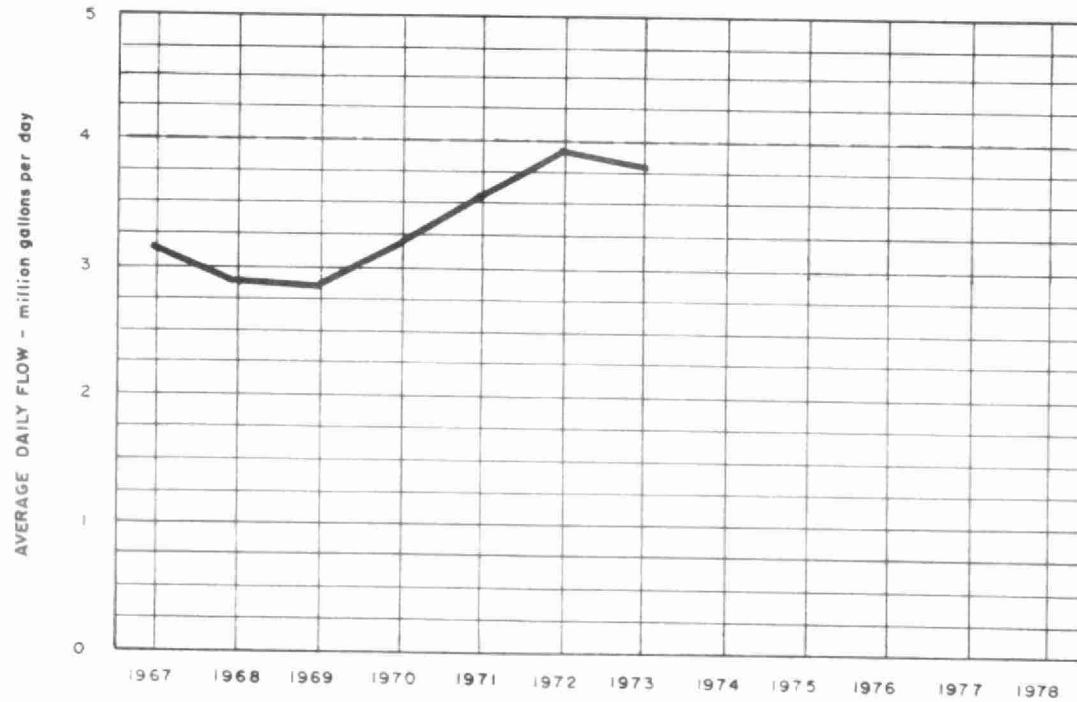
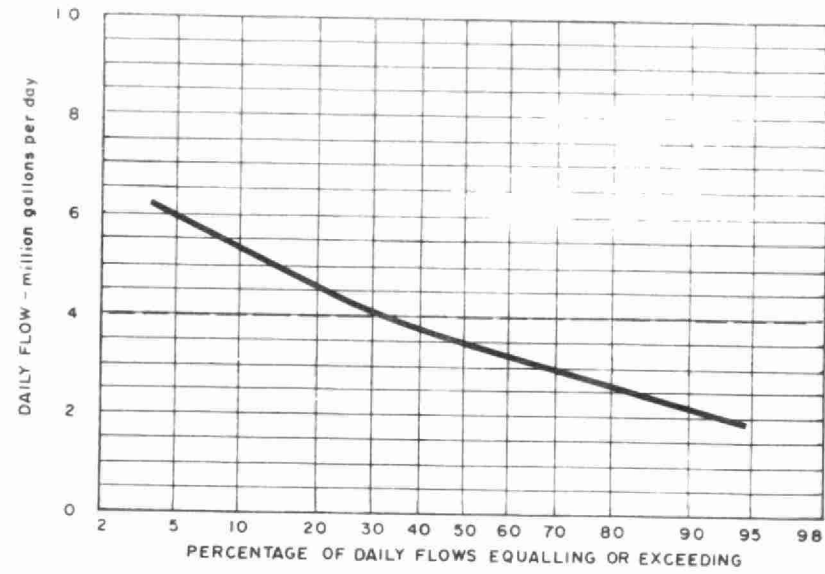
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			\$/M.G.	¢/lb BOD
1968	1020	\$ 54,187	53	6
1969	1050	59,395	57	3
1970	1182	63,815	54	5
1971	1300*	67,241	52	5
1972	1441	81,849	57	10
1973	1387*	82,101	59	8

* Estimate

OPERATING EXPENDITURES

SALARIES AND WAGES	<u>\$39,663</u>
EMPLOYEE BENEFITS	<u>1,627</u>
TRANSPORTATION & COMMUNICATIONS	<u>1,895</u>
SERVICES	<u>11,859</u>
SUPPLIES AND EQUIPMENT	<u>27,057</u>
ACQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	<u>0</u>
TRANSFER PAYMENTS	<u>0</u>
OTHER TRANSACTIONS	<u>0</u>
TOTAL	<u>\$32,101</u>

PROCESS DATA FLOWS



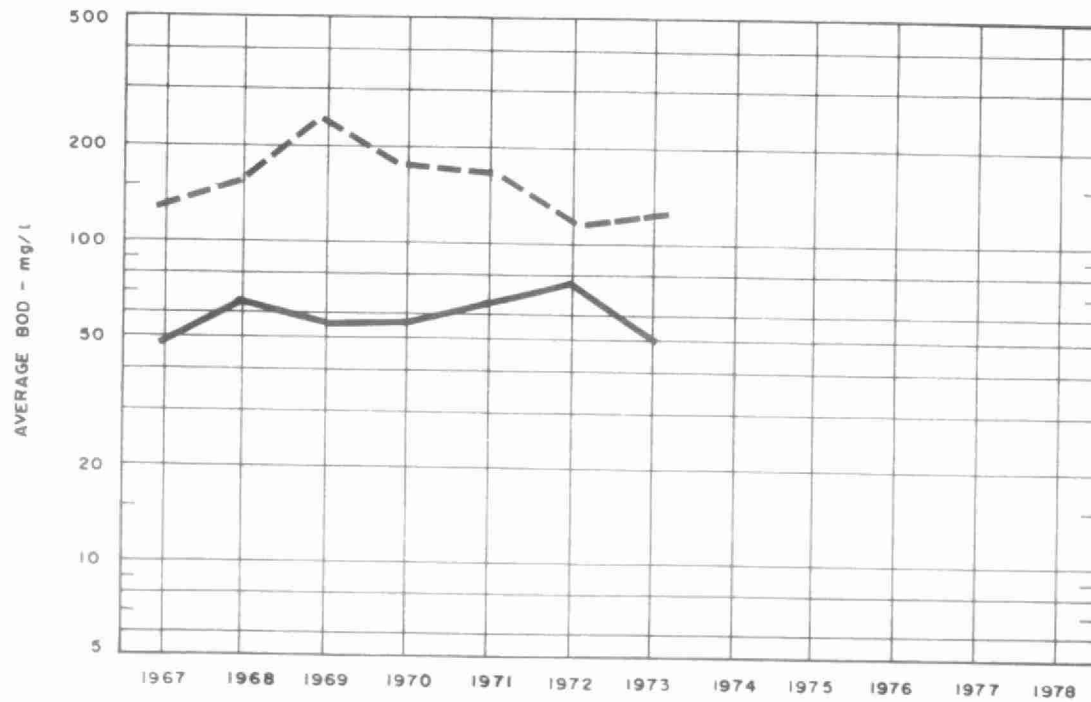
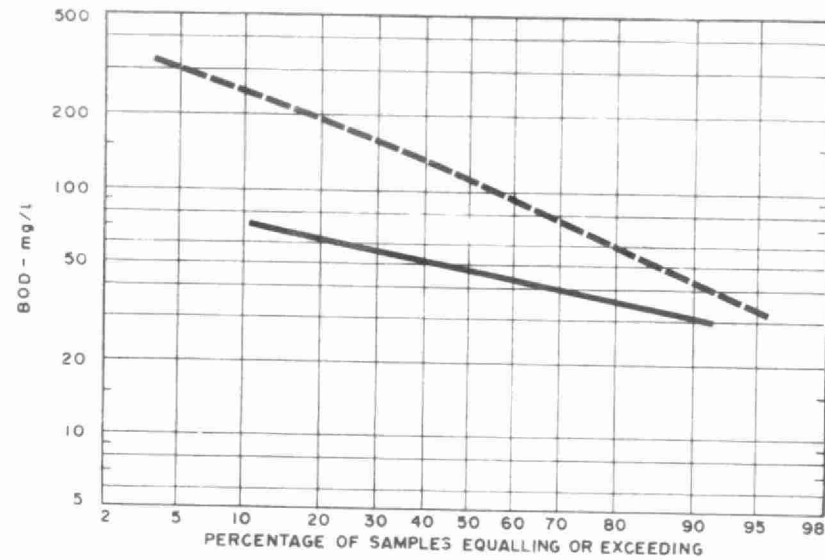
DESIGN CAPACITY — — — — —

PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW million gallons	AVERAGE DAY mil. gal	MAXIMUM DAY mgd	INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l P	EFFLUENT mg/l P
						%	10 ³ pounds			%	10 ³ pounds		
JAN				160	55	64		200	58	70		8.5	3.2
FEB				140	47	65		130	53	59		6.8	3.6
MAR				50	50	0		120	65	44		4.6	4.0
APR	102	3.4	8.8	100	51	49	50	120	68	45	56	6.4	4.4
MAY	174	5.6	9.9	83	47	43	62	120	54	55	110	3.2	4.2
JUNE	85	2.8	5.8	120	60	48	46	180	65	63	96	6.5	4.2
JULY	97	3.1	4.2	110	46	58	62	140	66	54	74	5.6	4.0
AUG	108	3.5	5.1	290	58	80	250	310	104	66	220	6.9	4.2
SEPT	123	4.1	5.7	33	22	33	14	120	49	61	94	2.4	2.3
OCT	113*			120	68	43		230	76	67		4.8	4.8
NOV	112*			150	43	72		110	69	39		4.3	3.0
DEC	119	3.8	4.6	53	40	25	15	81	33	59	57	3.8	2.8
TOTAL	1387*	-	-	-	-	-		-	-	-		-	-
AVG.		3.8	MAXIMUM 9.9	120	50	58	88	160	63	60	100	5.4	3.9
No. of Samples	-	-	-	23	22	-	-	87	84	-	-	22	21

* Estimated

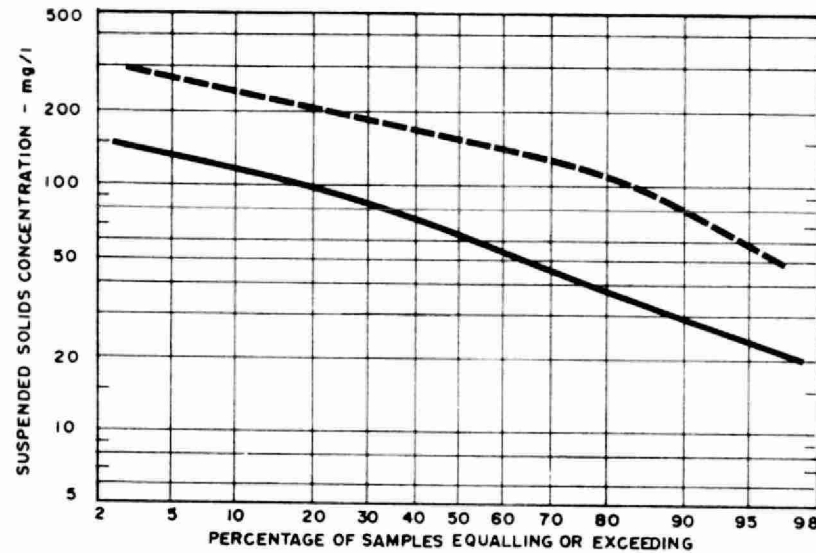
BIOCHEMICAL OXYGEN DEMAND



PLANT INFLUENT - - - - -

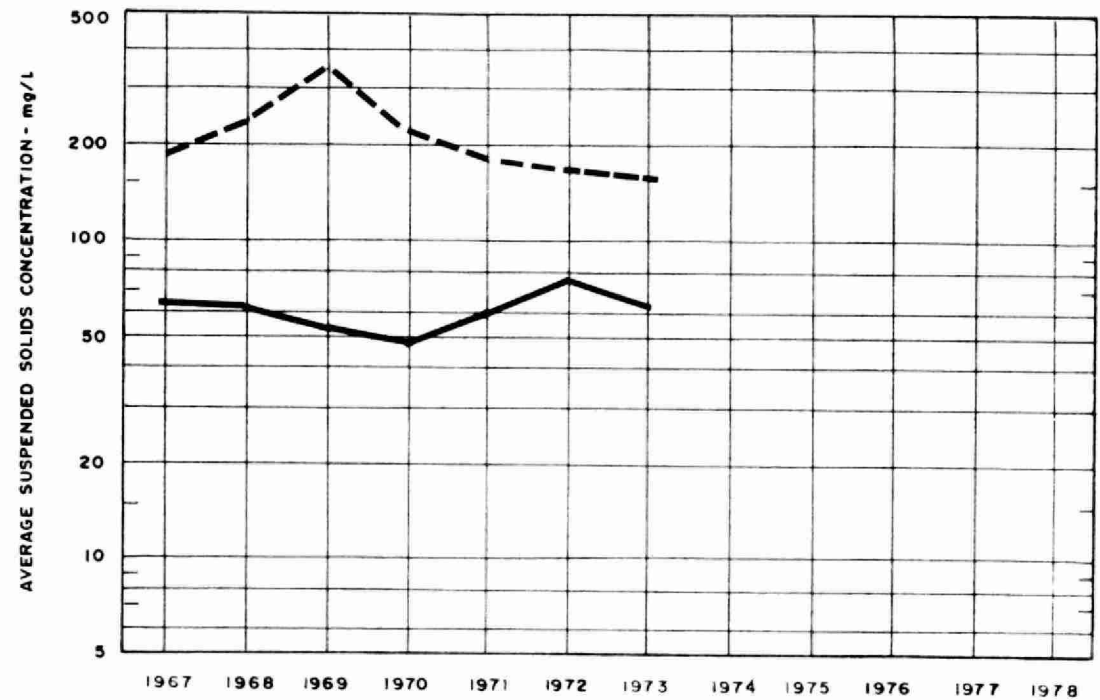
PLANT EFFLUENT —————

SUSPENDED SOLIDS

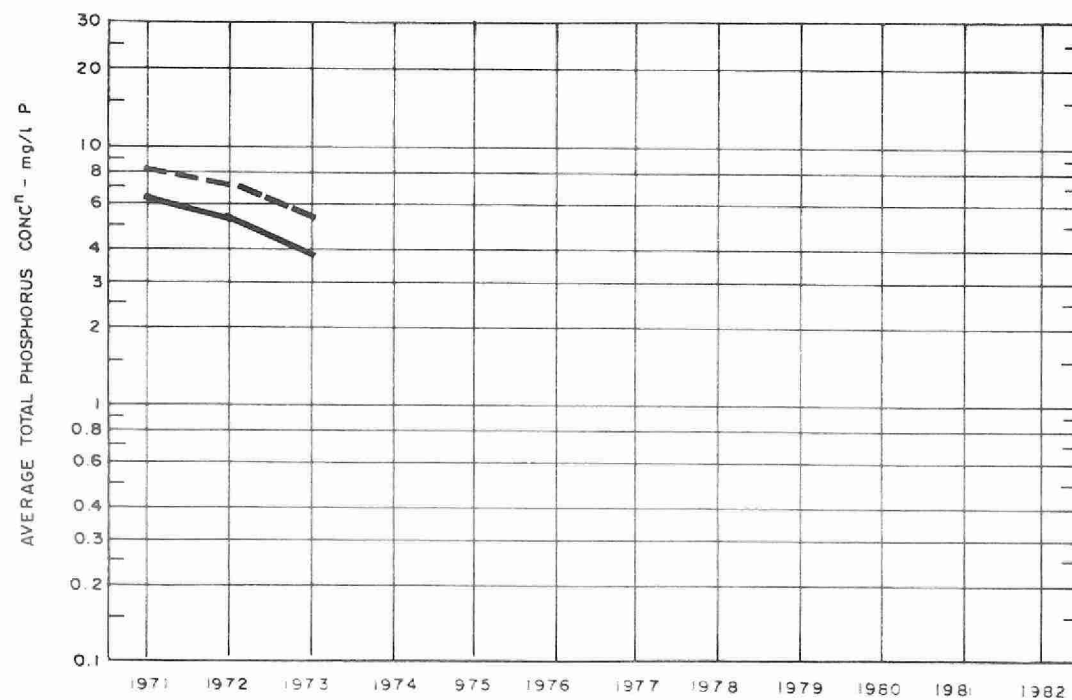
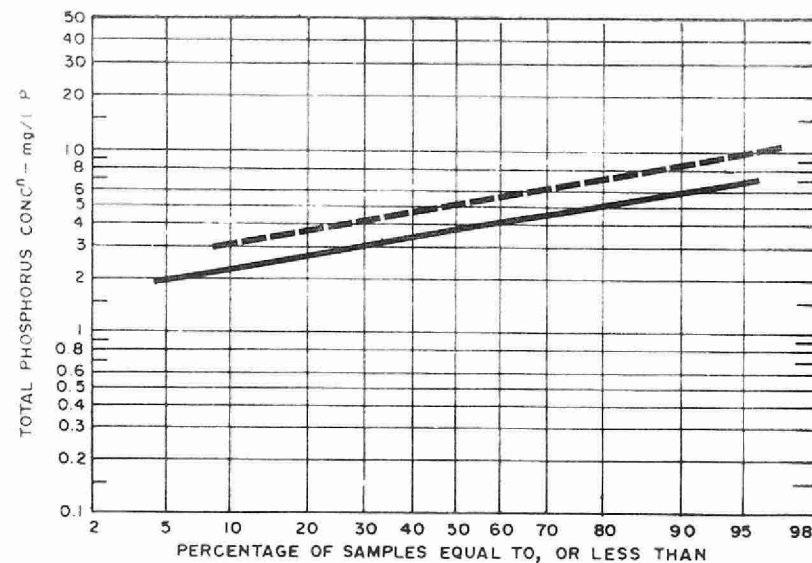


PLANT INFLUENT - - - - -

PLANT EFFLUENT _____



PHOSPHORUS

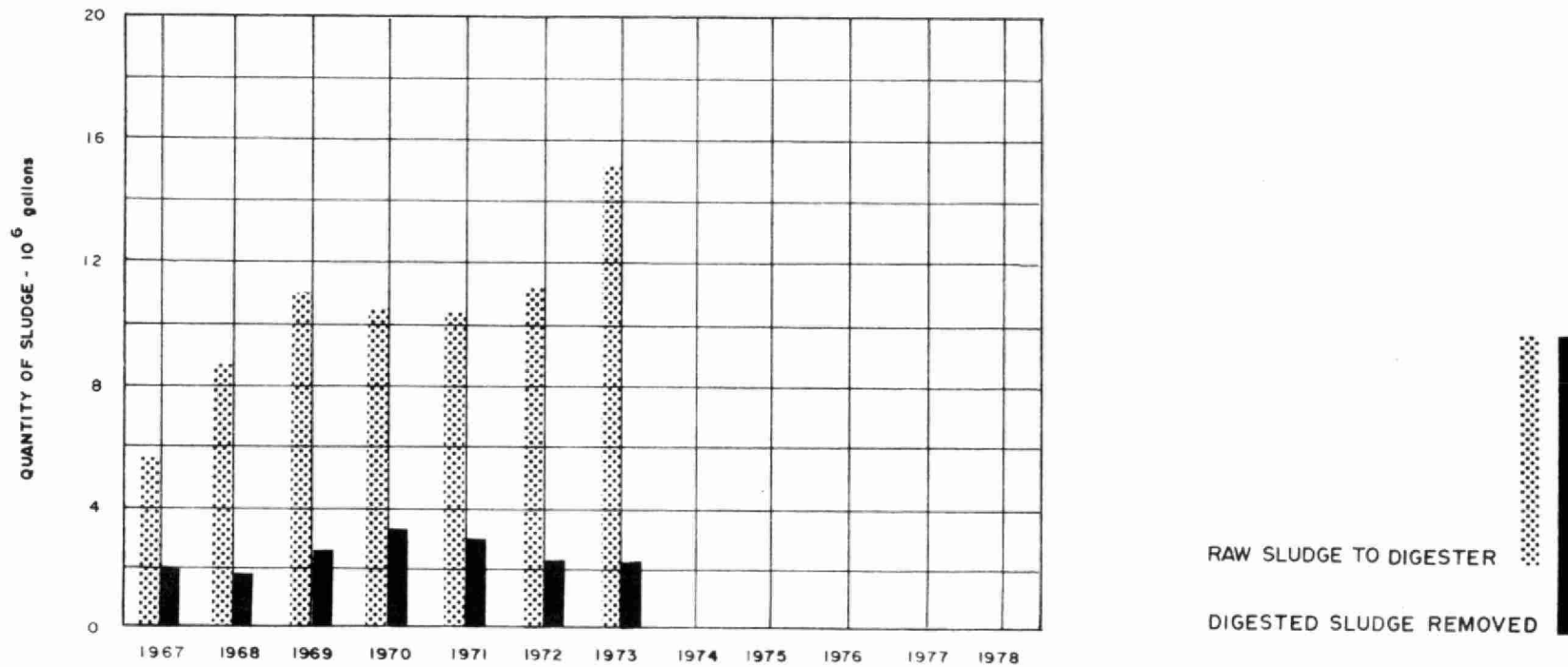
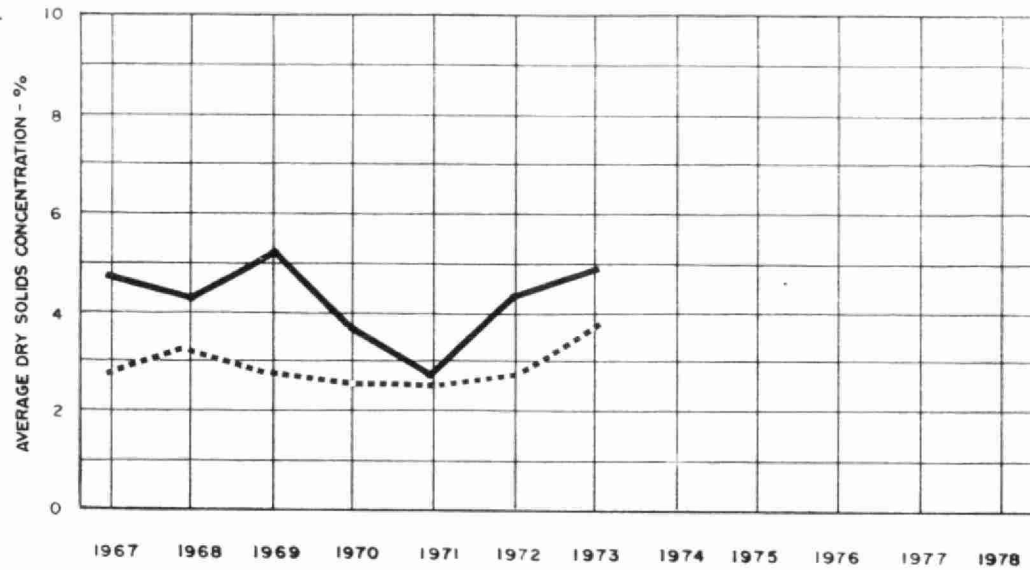


PLANT INFLUENT - - - - -

PLANT EFFLUENT —————

DIGESTION

RAW SLUDGE
DIGESTED SLUDGE ———



RAW SLUDGE TO DIGESTER
DIGESTED SLUDGE REMOVED ———

TREATMENT DATA

MONTH	GRIT	CHLORINATION		SLUDGE DIGESTION and DISPOSAL							
	QUANTITY REMOVED cubic feet	CHLORINE USED 10 ³ pounds	AVERAGE DOSAGE mg/l	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT	SLUDGE HAULED cubic yards
				QUANTITY 10 ⁶ gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	QUANTITY REMOVED 10 ⁶ gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	TOTAL SOLIDS %	
JAN	660	4.3		1.43	3.4	69	0.12	3.8	64	0.1	734
FEB	320	3.7		1.13	3.3	74	0.10	5.9	68	0.6	589
MAR	340	4.0		1.01	4.8	75	0.08	3.5	57	0.2	511
APR	220	4.2	4.1	1.33	3.3	71	0.09	5.4	40	0.1	512
MAY	325	4.1	2.4	1.38	2.9	73	0.15	4.1	59	0.1	917
JUNE	225	4.2	5.0	1.23	4.2	50	0.17	6.0	57	0.2	991
JULY	230	2.9	3.0	0.96	3.6	63	0.24	7.0	48	0.2	1418
AUG	620	4.7	4.3	1.44	4.1	65	0.23	4.8	57	0.1	1373
SEPT	460	4.6	3.7	1.39	7.8	79	0.22	4.1	52	0.1	1282
OCT	470	4.9		1.50	2.8	64	0.22	5.2	50	0.1	1282
NOV	315	3.8		1.28	2.8	59	0.19	3.1	44	0.1	1103
DEC	350	4.5	3.8	1.07	1.6	71	0.29	5.0	67	0.3	1710
TOTAL	4535	49.9	—	15.15	—	—	2.10	—	—	—	12422
AVG.	3.2 cubic feet/mil gal	4.2	3.6	1.26	3.7	68	0.18	4.9	59	0.2	1035

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